I Claim:

1. A method for redirecting traffic in a SONET ring family when a fault is detected, comprising the steps of:

creating and assigning an addition protection SONET ring to the ring family

detecting a service alarm in a SONET ring;

determining whether there are any service alarms on a protection ring in said SONET ring family;

determining whether the protection ring is in use;

marking the protection ring as being in use if no alarms in the protection ring are

10   detected in the protection ring is not in use; and

directing traffic from the ring in which a service alarm is detected onto said protection ring.

2. The method according to claim 1, wherein a ring family is a set of rings that share the
15   same fiber sheath.

3. The method according to claim 2, wherein the ring family shares dense wavelength division multiplexed optical transport systems on each span around the rings.

20   4. The method according to claim 1, wherein said protection ring has nodes in all nodes served by said ring family.

5. The method according to claim 1, wherein failed facilities are routed to the same tributaries on the protection as on the ring in which the service alarm is detected.

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6. The method according to claim 5, wherein the facilities are provisioned on the service

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ring from lowest tributary to highest tributary and the facilities on the protection ring are provisioned from highest tributary to lowest tributary.

7.   A method for redirecting traffic in a SONET ring family when a faults affecting all of the rings in the ring family is detected, comprising the steps of:

creating and assigning an addition protection SONET ring to the ring family

assigning service and protection lines on the SONET rings to optical transport systems in a first manner;

detecting a service alarm in a SONET ring in said SONET ring family. Determining from which span in said SONET ring the service alarm was detected;

determining whether there are any service alarms on a span in the protection ring which corresponds to the failed span in the SONET ring;

determining whether the span on the protection ring is in use;

marking the protection ring in use the only alarm on the protection ring corresponds to the same span as the failed span on the service SONET ring; and

directing traffic from the failed span to spans in the protection ring around the opposite side of the ring.

8.   The method according to claim 7, wherein a ring family is a set of rings that share the same fiber sheath.

9.   The method according to claim 8, wherein the ring family shares dense wavelength division multiplexed optical transport systems on each span around the rings.

10.   The method according to claim 7, wherein said protection ring has nodes in all nodes served by said ring family.

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11.   The method according to claim 7, wherein failed facilities are routed to the same tributaries on the protection as on the ring in which the service alarm is detected.

12.   The method according to claim 11, wherein the facilities are provisioned on the service ring from lowest tributary to highest tributary and the facilities on the protection ring are provisioned from highest tributary to lowest tributary.